

200 W Programmable Electronic Load

User Manual



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1 Safety Summary

The following safety precautions apply to both operating and maintenance personnel and must be observed during all phases of operation, service, and repair of this instrument. Before applying power, follow the installation instructions and become familiar with the operating instructions for this instrument.

GROUND THE INSTRUMENT

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. This instrument is grounded through the ground conductor of the supplied, three-conductor AC power cable. The power cable must be plugged into an approved three-conductor electrical outlet. Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power jack and mating plug of the power cable meet IEC safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Instrument covers must not be removed by operating personnel. Component replacement and internal adjustments must be made by qualified service personnel. Disconnect the power cord before removing the instrument covers and replacing components. Under certain conditions, even with the power cable removed, dangerous voltages may exist. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt any internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY THE INSTRUMENT

Do not install substitute parts or perform any unauthorized modifications to this instrument. Return the instrument to Global Specialties for service and repair to ensure that safety features are maintained.

WARNINGS AND CAUTIONS

A **WARNING** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in injury or death to personnel.

A **CAUTION** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in damage to or destruction of parts or the entire product.

WARNING: Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power jack and mating plug of the power cable meet IEC safety standards.

WARNING: To avoid electrical shock hazard, disconnect power cord before removing covers. Refer servicing to qualified personnel.

CAUTION: Before connecting the line cord to the AC mains, check the rear panel AC line voltage indicator. Applying a line voltage other than the indicated voltage can destroy the AC line fuses. For continued fire protection, replace fuses only with those of the specified voltage and current ratings.

CAUTION: This product uses components which can be damaged by electrostatic discharge (ESD). To avoid damage, be sure to follow proper procedures for handling, storing and transporting parts and subassemblies which contain ESD-sensitive components.

COMPLIANCE STATEMENTS



This product is subject to Directive 2002/96/EC of the European Parliament and the Council of the European Union on waste electrical and electronic equipment (WEEE), and in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal waste. Please utilize your local WEEE collection facilities in the disposition of this product and otherwise observe all applicable requirements.

2 Introduction

2.1 Overview

The LD-200P is a programmable high resolution load with digital button control for ease of operation. With a voltage range of 1-63 V and current range of 10 mA to 15 A, the LD-200P is the perfect all-round electronic load. The LD-200P can operate in constant current (CC), constant voltage (CV), constant resistance (CR), and constant power (CP) mode and has a standard USB or RS-232 serial interface for remote communication.

2.2 Features

- High resolution (20 mV, 1 mA, 0.1 W, 0.1 Ω)
- 9 sets of programmable memory
- 4-digit LED display
- Voltage range: 1~63 V
- Current range: 10 mA~15 A
- Maximum power: 200 W
- Operation modes: constant voltage (CV), constant current (CC), constant power (CP), and constant resistance (CR)
- Built in USB/RS-232 interface
- Over Voltage (OVP) & Over Current Protection (OCP)

3 Installation

3.1 Initial Inspection

This unit is tested prior to shipment. It is therefore ready for immediate use upon receipt. An initial physical inspection should be made to ensure that no damage has been sustained during shipment.

Inspect the packing box on receipt for any external damage. If any external damage is evident, remove the instrument and visually

inspect its case and parts for any damage. If damage to the instrument is evident, a description of the damage should be noted on the carrier’s receipt and signed by the driver or carrier agent. Save all shipping packaging for inspection. Forward a report of any damage to the agent through which the unit is procured.

Retain the original packing in case subsequent repackaging for return is required. Use of the original packing is essential.

After the mechanical inspection, verify the contents of the shipment. The items included in this package are:

- LD-200P Electronic Load
- Power Cord
- User Manual
- Banana Plug to Alligator Clip Lead Wires (2 Black & 2 Red)

3.2 Input Power Requirements

The instrument can operate on 120 V or 240 VAC source at 50 or 60 Hz. The line selector plug on the rear panel allows you to select the line voltage. Before connecting the power plug to an AC line outlet, be sure to check that voltage selector plug is set in the correct position corresponding to the line voltage in your location and the fuse rating is as shown in the table.

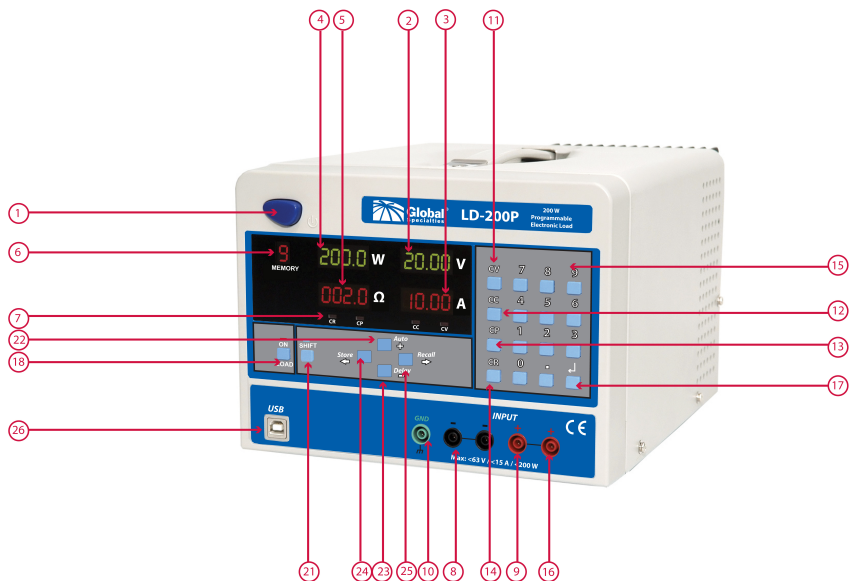
Selector	Line Voltage	Fuse
120 V	100~125 V, 50/60 Hz	1.0 A
240 V	220~240 V, 50/60 Hz	0.6 A

3.3 Ventilation

Before applying power to unit, make sure that input voltage setting is correct and the ventilation holes are not blocked. Ensure that the ventilation fan located on the rear panel is working well (it should turn on when powered on). Do not load the output if ventilation fan is not working otherwise it may cause the power supply to overheat.

4 Product Description

4.1 Front Panel



Front Panel

1.	Power button: Power On/Off.
2.	V display: Indicates voltage limit or testing voltage value
3.	C display: Indicates current setting or testing current value.
4.	W display: Indicates power setting or testing power value.
5.	Ω display: Indicates resistance setting or testing resistance value.
6.	Memory display: Indicates the present data location number in memory.
7.	Status display: Indicates the operational state.
8.	– Input BNC connector: Negative input terminal.
9.	+ Input BNC connector: Positive input terminal.
10.	GND BNC connector: Ground terminal.
11.	CV: “Enter” constant voltage mode.
12.	CC: “Enter” constant current mode.
13.	CP: “Enter” constant power mode.
14.	CR: “Enter” constant resistance mode.
15.	0~9: Data input.
16.	“ • ” : Float point
17.	 : “Enter”
18.	LOAD button.
19.	Push to activate load and LED.
20.	Push again to turn off.
21.	SHIFT button: Push to access the secondary functions.
22.	+ (Auto): + : Increase the setting value. Auto: Push [SHIFT][Auto] to change to Auto function.
23.	- (Delay): - : Decrease the setting value. Delay: Push [SHIFT][Delay] to change to Delay function.
24.	⇐ (Store): ⇐ : Change digit to the left. Store: Push [SHIFT][Store] to change to Store function.
25.	⇒ (Recall): ⇒ : Change digit to the right. Recall: Push [SHIFT][Recall] to change to Recall function.
26.	USB / RS-232 terminal.

4.2 Rear Panel Description

Rear Panel	
27.	Heat sink: Heat dissipation for power transistor.
28.	Ventilation fan: 8" 24 V DC fan.
29.	Power input socket.
30.	▲ The input power voltage indicator.
31.	Fuse holder and input voltage selector.



The image shows the rear panel of a white electronic device. On the left is a large black heat sink (27). In the center is a circular ventilation fan (28) with a label that includes 'HISPL' and '24V 10W'. Below the fan is a power input socket (29) with a voltage indicator (30) marked with a triangle. At the bottom is a fuse holder and input voltage selector (31). A white handle is attached to the top. A CE mark and other regulatory symbols are visible on the top right of the panel.

5 Operating Instructions

5.1 Constant Voltage Setting

Push **[CV]**, key in the voltage, and hit the “Enter” key to set the input voltage value. For example, to set the input voltage value to 10.5 V:

Push **[CV] [1] [0] [.] [5]** “Enter”

5.2 Constant Current Setting

Push **[CC]**, key in the current, and hit the “Enter” key to set the input current value. For example, to set the input current value to 3.05 A:

Push **[CC][3][.][0][5]** “Enter”

If the input current is less than the set current value, the LD-200P will pull down the input voltage until input current equals the set value or input power reaches 200 W.

5.3 Constant Power Setting

Push **[CP]**, key in the power value, and hit the “Enter” key to set the input power value. For example, to set the input power value to 110 W:

Push **[CP][1][1][0]** “Enter”

5.4 Constant Resistance Setting

Push **[CR]**, key in the resistance value, and hit the “Enter” key to set load resistance value. For example, to set the load resistance value at 510 Ω :

Push **[CR][5][1][0]** “Enter”

5.5 List Mode

5.5.1 Data Storage

Push **[SHIFT][Store]**, number key, “Enter” key to save settings to the target memory location. For example, to save settings to memory location 5:

Push **[SHIFT][Store][5]** “Enter”

5.5.2 Data Recall

Push **[SHIFT][Recall]**, number key, “Enter” key to recall all setting values from target memory location. For example, to recall values from memory location 2:

Push **[SHIFT][Recall][2]** “Enter”

5.5.3 Delay Time

Use the delay function to set how long the load will run the settings from a location. For example to have memory location 2 run for 30 seconds, set the delay to 30 seconds and save this in location 2.

First, if you are showing a different memory location, push **[SHIFT][Recall][2]** “Enter” to go to memory location 2. Then push **[SHIFT][Delay][3][0]** “Enter.” Finally, push **[SHIFT][Store][3]** “Enter” [to save].

5.5.4 Run List

Push **[SHIFT][Auto]** “Enter” key to automatically run through the settings of locations 1-9. For example, say that you have already set location 1 to 5 V with a delay time of 10 seconds. And location 2 has been set to 60 V with a delay time of 15 seconds. Location 3-9 all have 0 V for 0 seconds. Now to run the programs automatically:

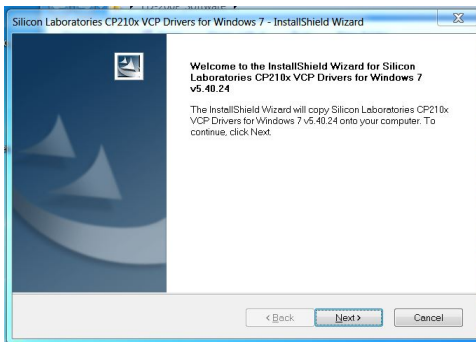
Push **[SHIFT][Auto][LOAD]**.

The load will now show location 1 with and the testing voltage (up to the limit of 5 V) and after 10 seconds it will change to location 2 with a limit of 60 V.

Auto execute will run continuously through your 9 programs starting at location 1. Each location must be set to the same mode such as CC or CV otherwise the program will stop at the first location with a different mode.

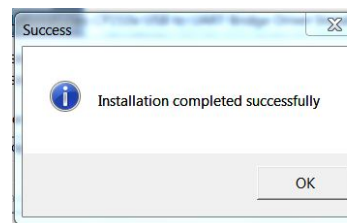
5.6 Control from a PC

1. The LD-200P Software is compatible with the following operating systems: Windows 9X, Windows ME, and Windows XP, Windows 7 (32-bit only).
2. Download the software from the LD-200P page on our website: globalspecialties.com. See the “DOWNLOADS” tab.
3. Browse to the copy of the software on your computer.
4. Double click on the “Setup.exe” file. Follow the instructions on the screen to install the LD-200P Software.
5. Browse to the Driver folder. Use **CP210x_VCP_Win2K_XP_S2K3** for Windows ME, 2000 or XP. Use **CP210x_VCP_Win7** for Windows 7. Double



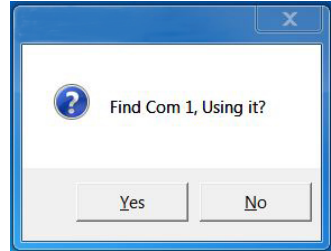
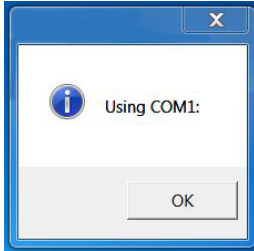
click on the appropriate driver. Follow the instructions on the screen to install the driver.

6. Connect the LD-200P to your



computer via a USB cable.

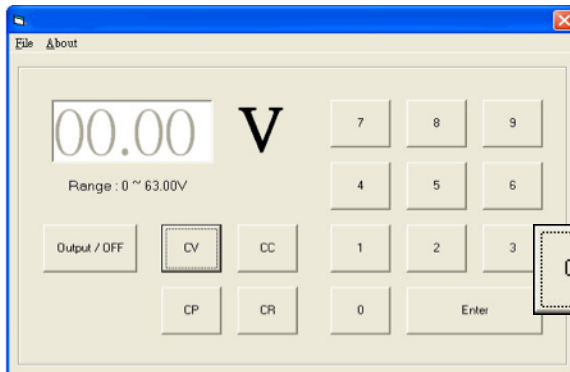
7. Open the LD-200P Software.
8. The LD-200P program will confirm the COM port. The software only recognizes COM ports 1-5, so your LD-200P should be assigned to one of those. For help with COM ports, see the “Help with COM ports” document in the LD-200P web page (DOWNLOADS).



9. The computer will display the image shown below. You can now control the LD-200P by your PC or on the front panel of LD-200P.

5.7 Output

The output is set “OFF”.
reset to
“**OFF**” on
each startup.



by default
It will be

- a. Click the
“**Output/ON**” to switch on the output.

- b. Click “**CV**”, “**CP**”, “**CC**”, “**CR**” to select the operation mode.

c. Click the number panel to input the voltage you need (0 – 63.00V).

1

d. Click “**Enter**” to activate the operation mode and the desired voltage on the LD-200P.

Enter

6 Specifications

Description	Specification	
Power Source	120/240 V Selectable	
Operation value	Voltage	63V
	Current	15A
	Power	200W
Constant Voltage	Range	1~63V
	Accuracy	$\pm(1\%+20\text{mV})$
	Resolution	20mV
Constant Current	Range	10mA~15A
	Accuracy : 10mA~1A 1A~6A 6A~15A	$\pm(0.5\%+1\text{mA})$ $\pm(0.5\%+10\text{mA})$ $\pm(1\%+100\text{mA})$
	Resolution: 10mA~1A 1A~15A	1mA 10mA
Constant Power	Range	1~200W
	Accuracy	$\pm 1\%+0.2\text{W}$
	Resolution	0.1W
Constant Resistance	Range	0.5~999 Ω
	Accuracy	$\pm 1\%+0.2\Omega$
	Resolution	0.1 Ω
Voltage Read back	Accuracy	$\pm 1\%+50\text{mV}$
	Resolution	20mV
Current Read back	Accuracy	$\pm 1\%+10\text{mA}$
	Resolution	10mA
Memory	Save address	1~9
Timer	Range	1~999999 sec
	Resolution	1 sec
Fuse	115V (100~120V)	1.0 A
	230V (220~240V)	0.6 A
Protection	Over Voltage & Over Current	
Power Source	120/240 V Selectable	

7 Maintenance

7.1 Preventative Steps

Please follow these preventive steps to ensure the proper operation of your instrument.

- Never place heavy objects on the instrument.
- Never place a hot soldering iron on or near the instrument.
- Never insert wires, pins, or other metal objects into ventilation fan.
- Never move or pull the instrument with power cord or output lead. More importantly, never move the instrument when the power cord or output lead is connected.
- Do not obstruct the ventilation holes in the rear panel as this will increase the internal temperature.
- Do not operate the instrument with the cover removed unless you are a qualified service technician.
- Clean and recalibrate the instrument on a regular basis to keep the instrument looking nice and working well.
- Remove any dirt, dust, and grime whenever they become noticeable on the outside cover using a soft cloth moistened with a mild cleaning solution.

7.2 When the Unit is Not Turning On

Check if the power ON/OFF switch is turned ON. Check for blown fuse. If not, then check the power cord. Please make sure that the power cord is properly connected to the unit. Please also check the main switch and ensure that the AC supply at your site is the same as the one mentioned at the rear chassis of the unit.

7.3 Fuse Replacement

If the fuse blows, the LED will not light and the instrument will not operate. Replace only with the correct value fuse. The fuse is located on the rear panel adjacent to the power cord receptacle.

Remove the fuse holder assembly as follows:

1. Unplug the power cord from the rear of the instrument.
2. Insert a small screwdriver in the fuse holder slot (located between fuse holder and receptacle).
3. When reinstalling fuse holder, be sure that the fuse is installed so that the correct line voltage is selected.

8 Service and Warranty Information

8.1 Limited Two-Year Warranty

Cal Test Electronics warrants this product to be free from defective material or workmanship for a period of 2 years from the date of original purchase. Under this warranty, Cal Test Electronics is limited to repairing the defective device when returned to the factory, shipping charges prepaid, within the warranty period.

Units returned to Cal Test Electronics that have been subject to abuse, misuse, damage or accident, or have been connected, installed or adjusted contrary to the instructions furnished by Cal Test Electronics, or that have been repaired by unauthorized persons, will not be covered by this warranty.

Cal Test Electronics reserves the right to discontinue models, change specifications, price, or design of this device at any time without notice and without incurring any obligation whatsoever.

The purchaser agrees to assume all liabilities for any damages and/or bodily injury which may result from the use or misuse of this device by the purchaser, his employees, or agents.

This warranty is in lieu of all other representations or warranties expressed or implied and no agent or representative of Cal Test

Electronics is authorized to assume any other obligation in connection with the sale and purchase of this device.

8.2 Calibration and Repair



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TestEquipmentDepot.com